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DIVISION OF
OIL, GAS & MINING **DOG**
MINERALS PROGRAM
FILE COPY

September 27, 1989

Mr. Ed King
Jumbo Mining Co.
6305 Fern Spring Cove
Austin, TX 78730

Subject: Approval for the Use of Heap Leach Pads

Dear Mr. King:

We have received your letters of 14 August, 23 August and 11 September 1989. Based on discussions in our meetings of 23 August and 12 September 1989, and the review of these letters, our conclusions relative to approval of the further use of the permitted and unpermitted heap leach pads are as follows:

1. Consultant Services

The issues relative to approval for further use of the existing heap leach pads are technical in nature. Records of construction details and quality assurance tests have not been made available to you by the Western States Minerals or their consulting engineers. Likewise, ground water depth and quality have not been demonstrated. These facts have also compounded our problem of ascertaining the integrity and performance of pads whether permitted or not. Therefore, we feel that the services of a qualified geotechnical consultant are essential in helping you to address these issues in a timely manner.

2. Ground Water Quality and Monitoring

We have reviewed analyses of three ground water samples submitted by you. Total dissolved solids (TDS) concentration in two samples was less than 2,000 milligrams per liter (mg/l). Other constituents in these two samples did not exceed any of the maximum contaminant levels (MCLs). A copy of the list is enclosed showing various constituents and corresponding MCL. Therefore, two samples show drinkable quality of water; the third sample showing undrinkable water quality.

Our staff has provided a copy of the *Utah Ground Water Quality Regulations* for your information and use. Depending on the results of the investigations on ground water depth and quality, and integrity of existing liners, a ground water discharge permit may be required.

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As discussed in our last meeting, Mr. Mack Croft of my staff will be available to examine the existing exploratory borings at a mutually convenient time. The scope of a detailed investigation of ground water depth and quality can be developed based on Mr. Croft's preliminary evaluation of geologic information, and the recommendations of your consultants. A number of neutron logs may be required in the detailed investigations.

3. Permitted Pads

The request for the use of the permitted pads *beyond* October 1990 will be considered based on the following information:

- a. geologic features protecting ground water at the site,
- b. depth to ground water,
- c. ground water quality,
- d. condition of the existing liner based on testing, and,
- e. functionality of leak detection system.

If ground water is of poor quality, or is found at extreme depths with geologic isolation, the leak detection system need not be tested. Methods and procedures to substantiate these items must be explored and recommended for our review by your consultants.

The extension, if approved, will be for a specific period of time only. Further extensions may be granted if: (a) terms and conditions of the issued construction permit and approvals are complied with, such as ore height, (b) pads have not leaked, (c) pads including appurtenant parts are deemed to be in a satisfactory condition for further use, and (d) compliance with applicable regulations in force is feasible.

4. Unpermitted Pads

At your request, we contacted Mr. Ron Perry of SRK consulting engineers and discussed the basis of their opinion relative to the details of construction of the unpermitted heap leach pads. The SRK opinion is based upon visual observations, and conversations with the Western States Minerals' personnel involved with the construction of these facilities in 1984. No documentation detailing nature, techniques and quality assurance tests relevant to the pad construction was found in the Western States Minerals' project files.

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In light of this situation, the integrity of construction of the unpermitted heap leach pads still remains in question. Sections of these pads may be excavated to reveal necessary details. The sufficient evidence of a functional leak detection system, if installed, is essential. Such testing may be unnecessary if ground water of poor quality is found at extreme depths.

5. Surface runoff

Runoff from precipitation and snowmelt can not be allowed to flow onto pads, or into process ponds, whether permitted or not. Therefore, runoff must be diverted around each pad and process pond using adequately constructed and maintained diversions.

In summary, the integrity of pads, performance of leak detection system, and ground water depth and quality have not been established conclusively. The approval for further use of the permitted pads does not relieve you of the obligation to comply with the *Utah Ground Water Quality Regulations*. A qualified geotechnical consultant should be able to address these technical issues.

Design and construction of new leach pads built to current techniques and materials may be cost-effective in the event additional ore reserves are defined.

If we can be of further assistance, please contact Mr. Kiran L. Bhayani or Mr. Charlie Dietz of my staff.

Sincerely,
Utah Water Pollution Control Committee



Don A. Ostler, P.E.
Executive Secretary

Enclosures
CGD/MGC/KLB:ag

cc: Mr. Bruce Hall, Central Utah District Health Department
Mr. Lowell Braxton, Division of Oil, Gas and Mining

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